DOCUMENT RESUME

ED 293 256 EC 202 455

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TITLE Crucial Learning and Instructional Skills for Skill-Deficient College Students.
PUB DATE [85]
NOTE 23p.
PUB TYPE Reports - Research/Technical (143) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cloze Procedure; Cognitive Processes; *College Students; Diagnostic Tests; Educational Diagnosis; Higher Education; Instructional Design; *Learning Disabilities; *Learning Strategies; Reading Ability; *Reading Difficulties; Remedial Instruction; Spelling; Student Characteristics; Student Evaluation; *Study Skills; *Teaching Methods; Undergraduate Students
IDENTIFIERS United States (Midwest)

ABSTRACT

This paper reports findings on the academic and intellectual characteristics of undergraduate students attending two midwestern state universities, and outlines specific learning strategies and instructional strategies to alleviate the academic problems of skill-deficient undergraduates. In the first study, the reading performance of 128 college freshmen and sophomores was evaluated using cloze passages from introductory Western Civilization and Sociology textbooks. In another study, a 10th grade-level cloze reading test, the Stanford Achievement Spelling test, and Raven's Progressive Matrices were administered to three groups of undergraduates with varying proficiency levels. Both studies indicated that there exists a sizeable number of skill-deficient students attending institutions of higher education, and spelling skills are equally deficient, if not more deficient, than reading. Colleges should therefore improve students' crucial learning skills and instructors should use specific teaching strategies which may assist students in being successful. Three major categories of necessary learning skills are identified: strategies for the acquisition of content information, for the storage of newly learned information, and for the demonstration of newly learned information. (JDD)

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Crucial Learning and Instructional Skills for Skill-Deficient College Students

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CRUCIAL LEARNING AND INSTRUCTIONAL SKILLS FOR SKILL-DEFICIENT COLLEGE STUDENTS

Joe N. Crank

In many high school settings teachers conscientiously stay in close touch with their students' daily work, monitor assignments as they are due, follow-up in cases where academic problems arise, and often provide emotional support, encouragement and direction. Those are characteristics of an effective teacher at the high school level. Also, students with skill deficiencies may be successful in secondary schools due to teacher involvement. Yet when students enter the university setting, the situation is often quite changed.

In many undergraduate classes each student is merely one face in a sea of faces. Instructors usually see their students only two or three times a week, often have no idea of how their students are progressing other than what is recorded in the grade book, are unaware of problems many of the students are having, and have little personal contact with individual students unless the students themselves seek it. Many introductory level classes in a college or university have a minimum of sixty to a hundred students per section and sometimes have enrollments much higher.

Indeed, the situation for students has changed drastically from what is often individualized, personal attention during high school to the demands of college which exceed those of the secondary setting (Stephens & Weaver, 1985). Also, although a majority of undergraduates are successful learners, the shift in demands can be quite marked and troublesome for many . Given these general assertions, this article will report the findings of two studies

of the academic and intellectual characteristics of selected groups of undergraduate students attending two midwestern state universities. Moreover, specific learning strategies and instructional strategies which can alleviate the academic problems of skill-deficient undergraduates will be presented.

Academic and Cognitive Skills of Different Groups of Undergraduate Students

In an effort to better understand how well students at the University of South Dakota read the materials in introductory level classes, the reading performance of a sample of college freshmen and sophomores was evaluated. To accomplish this, cloze passages (reading material from which words have been deleted and which the students are asked to provide) were constructed from the textbooks utilized in introductory courses in Western Civilization and Sociology.

These classes were chosen because they are not technical or scientific classes which would be likely to introduce special reading problems for the students. The cloze passages were administered during the tenth and twelfth weeks of the semester, respectively. The passages were taken from the readings to be assigned in the textbook for the coming week. That is, they were readings the students were assumed to be ready to read outside of class. A total of 128 students (65 in Western Civilization, 63 in Sociology) were administered the cloze passage appropriate for the class in which they were enrolled. Using procedures outlined by Estes and Vaughn (1985), the responses were scored and evaluated. For each group the results indicate that the textbook used in each class was difficult enough for the students to be at their frustration reading level. That is, the results for both groups

indicate the textbooks were too difficult for them to read effectively.

A similar study was conducted at another mid-western state university (The University of Kansas). In order to identify the academic and cognitive skill level of college learning deficient students, (Crank, 1984) administered a tenth grade level cloze reading test, the Stanford Achievement Spelling test, and Raven's Progressive Matrices test to three groups of undergraduage college students. The three groups of students were enrolled in developmental English courses, introductory psychology courses, and Project ACSES (a program for learning disabled (LD) students).

Students in Developmental English were those whose writing samples had been screened during the first week of classes by a panel of three English professors and recommended to withdraw from regular freshman English and enroll in the developmental class. The mean spelling grade for these students was 9.0 on the Stanford Spelling test. The median grade level score was 9.3. The mean and median Raven's Progressive Matrices score for this group was between the 50th-75th percentile range, indicating average to slightly above average nonverbal cognitive problem solving ability. Sixty-seven percent of the tested students were frustrated with the tenth grade level reading material according to the results of the cloze reading test. Thirty-three percent of the students demonstrated Instructional-level proficiency on the tenth grade cloze test. No student in this sample of developmental English students obtained an independent reading level of tenth grade on the cloze reading test.

For the purpose of the study, students in Introduction to Psychology were assumed to be representative of the greater body of

skill-proficient freshman students. No subject in this sample of Psychology students currently or previously had been enrolled in Developmental English. Therefore, this group served as an average-skills comparison group to the other two groups of students with known learning deficiencies. On the Stanford Spelling test the mean grade level score was 12.5, and the median grade level score was 12.9. This test does not offer scores above the 12.9 grade level, therefore, a ceiling effect possibly occurred, thus indicating the obtained mean and median scores were lower than the students' true spelling level. The mean and median percentage range scores on the Raven's Progressive Matrices Test was 75th to 90th percentile. Fifteen percent of the students obtained a proficiency rating of frustration on the tenth grade cloze reading test, while 24% and 60% obtained ratings of instructional and independent, respectively. In summary, the students in this group, on average, demonstrated proficient spelling and nonverbal cognitive problem solving skills; however, a larger percentage demonstrated difficulty in comprehending the tenth grade cloze reading passages.

The evaluation results of the learning disabled group were similar to those of the students enrolled in Developmental English. A more comprehensive assessment of the LD students was completed; however,those results will not be presented here. The mean Stanford Achievement Test Spelling grade level score was 8.28. The mean percentile score on the Raven's Progressive Matrices Test was the 75th percentile. Approximately one half of the LD students completed the tenth grade cloze reading passage at the frustration level, and the other half was classified as either instructional or independent on the cloze test.

The foremention research of the psychometric characteristics of college undergraduate students attending two mid-western state universities, clearly substantiates the growing body of research which indicates that there indeed exists a sizeable number of skill-deficient students attending institutions of higher education. In addition, the test results indicate that spelling skills are equally deficient if not more deficient than reading.

In view of the academic skill problems of many intellectually capable undergraduate college students, it is encumbent upon institutions which desire to maintain student enrollment to improve students' crucial learning skills. Also, it is equally important for instructors to use specific teaching strategies which may assist students in being successful.

This leads to the question of what must be done in order to allow these students to perform adequately in their college studies. What crucial strategies should these students adopt to enhance their chances of success? What instructional strategies should the teachers of their classes employ to provide greater chances of success? Discussion of possible answers to these two questions form the basis of the balance of this paper.

Crucial Learning Strategies

In an attempt to clarify which skills are necessary for learning, recently, research has focused on the cognitive and learning strategies of skill deficient secondary and post-secondary learners. Deshler, Schumaker, Alley, Warner, and Clark (1982), and Sheinker, Sheinker and Stevens (1984) presented extensive reviews of the literature on the use of cognitive and learning strategies in adolescent and young adult

learners. Moreover, Alley and Deshler (1979) define learning strategies as, "techniques, principles or rules that will facilitate the acquisition, manipulation, integration, storage, and retrieval of information across situations and settings" (pg. 13). More specifically, the necessary learning skills can be classified into three major categories: strategies for the acquisition of content information, the storage of newly learned information, and strategies for the demonstration of newly learned information.

Acquisition of Information

Acquisition of information from textbooks can be difficult for many learning deficient college students. Armbruster (1984) drew attention to certain aspects of textbooks which she called inconsiderate text. Armbruster has emphasized that the overall text structure is important as a guide to understanding.

Awareness of textbook structure can be useful prior to textbook adoption in an undergraduate course. For example, the organization of a textbook which is "reader friendly" should be a criterion when choosing between different texts. Also, students may profit from instruction in specific strategies for gaining information from texts and other readings.

Textbook Reading Strategy. A first step toward enabling students to benefit from college textbooks is for the teacher to identify the book features that may impede student learning. Based on such knowledge teachers may help students find the basic structure in a chapter as well as key elements that will facilitate comprehension. The University of Kansas Institute for Research in Learning Disabilities has developed a specific learning strategy called Multipass, a revision of the SQ3R

method which includes specific steps of acquisition, to improve reading comprehension through the recognition of textual organization (Schumaker, Deshler, Denton, Alley, Clark, & Warner, 1982). With this strategy, instructors show students how to make several "passes" through a textbook gaining more information each time. The instructor can point out the importance of comprehension of chapter titles, introduction, summaries, overall organizational patterns, pictures and graphs, and table of contents. It must be kept in mind that many reading deficient students have not learned skills which proficient learners take for granted and have learned without instruction. Key information in boldface print or italics, new terms, important people, dates, and study questions should also be emphasized so that students may independently apply the strategy to readings assigned at later times.

Self-Questioning Strategy. Self-questioning strategies involve a series of steps to guide student inquiry. Specifically, students read the title, the subtitle or first sentence in a passage and ask themselves questions about this introductory information. Next, students are to read the text to find the answer to the questions they have posed. Finally, students repeat the answer to solidify their understanding of the material. Students may also mark the text with special symbols indicating the type of question answered: "who", "why", "where", "when", and "how." During discussions with the entire class, instructors can focus on the same questioning techniques to assure that students are reading content material carefully and are extracting important information.

Paraphrasing Strategy. Paraphrasing strategies are also designed to help reading deficient college students cope with reading demands and to

enhance comprehension. Paraphrasing may be used specifically to develop a student's recall of main ideas and specific facts in a text or hand-out. Research has shown that students' comprehension and retention scores increase in proportion to the quality and quantity of the paraphrased statements they make while reading a passage (Schumaker, Denton & Deshler, 1984). However, many students laboriously read lengthy passages rather than divide the material into small units and interact with the author's message. Through paraphrasing instruction, students are taught to read a short passage of material, ask themselves what has just been read, and rephrase the main idea and specific facts in their own words. As with other reading strategies, the paraphrasing strategy can be used in class discussions to check students' understanding of content materials. In addition instructors can learn how to paraphrase text material or class discussions, to correct misunderstanding, and to direct student inquiry.

Visual Imagery Strategy. Visual imagery is a strategy for improving the reading comprehension of prose material through improved recall. Warner (1978) developed a visual imagery strategy for use with low functioning adolescent students and found many of his students improved test scores on comprehension tests after being taught an imagery strategy. Briefly, in using visual imagery the student is asked to read short passages of materials and to visualize the scene which is described, incorporating actors, action, and details. This process is repeated to incorporate additional information into the scenario as needed.

Interpreting Visual Aids. Another strategy for acquiring information from printed material involves better use and interpretation

of visual aids such as maps, graphs, pictures and tables. For college students with limited reading abilities, such attention to visual aids can increase the student's ability to extract needed information from textbooks, or other assigned readings.

Storage of Information

Once information has been acquired, it must be stored, at least temporarily, until expression and demonstraton of that information is requested in the form of a test, or written product. Storage of information is usually accomplished through the use of memory strategies. However, storage strategies should also include listening and note-taking strategies. Two memory strategies can be easily adapted to college-level demands. First-letter mnemonic strategies are designed to aid students in memorizing lists of information. Students are taught to use mnemonics, or memorization aids, involving the first letter in each word of the list to be memorized. Either single words, phrases, or sentences using the first letters of each word in the list are formed to aid memorization. Paired associates strategies are designed to aid students in the memorization of pairs or small groups of related information, such as dates and events, people and accomplishments, or authors and works. Strategy-deficient undergraduates can be taught memorization techniques which utilize visual imagery, associations with familiar things in the students' own lives, and a first syllable memorization technique.

For students who have trouble recording complete lecture notes, a listening and note-taking strategy can be learned. This kind of strategy is designed to train students to focus on a speaker's cues in determining important items. This is particularly important in lecture

classes where discussion is limited. A note-taking strategy involves listening to a lecture, identifying the speaker's verbal cues about important information, noting the key words following the cue, and organizing these notes into outline form for future reference or study.

Expression and Demonstration of Competence

Expression of stored knowledge is usually manifested through written exercises or completion of assignments and tests. Writing is perhaps the greatest demand of college undergraduates, thus the ability to express one's self in writing is of paramount importance. Strategies have been developed and can be learned by skill-deficient college students which teach students how to recognize and generate complete sentences in four areas: simple, compound, complex, and compound-complex. Paragraph writing strategies can be learned which teach students how to monitor their work as well as to generate topic, detail, and clincher sentences. Error-monitoring is a strategy designed to teach students to re-read passages they have written to locate errors. Locating the four most common common types of errors (capitalization, overall editing and appearance, punctuation, and spelling) is a basic learning strategy. The use of idea diagrams (Armbruster and Anderson, 1982) may be incorporated into two steps (thinking and organizing) of a theme-writing strategy. Theme-writing strategies teach students how to generate ideas and how to organize these ideas into logical sequence.

Two other strategies which can help the student express or demonstrate knowledge are assignment completion strategies and test-taking strategies. In assignment completion the student is taught to write down, schedule, complete and turn in assignments. The strategy

may involve using an assignment notebook to record assignments for each class, analyzing whether additional information or help is needed, obtaining that help, scheduling time for assignment completion, planning the materials that are needed and the subtasks that need to be done to complete the assignment, completing the assignment, and handing it in on time. Time management is integral to the effectiveness of this kind of strategy. Test-taking strategies are designed to aid students in the completion of tests. Effective test taking involves deciding on priorities and scheduling time when taking a test, reading and following intructions, reading each question carefully, and strategically deciding on the answer, abandoning hard questions the first time through the test, estimating answers when necessary, and surveying the test to determine whether all questions have been answered and to check work.

Conclusion

Compared to tutorial and remedial programs, a strategies approach to helping skill-deficient college students appears to be optimal. Several self-instructional programs are available for learning task specific strategies. However, instruction via sound teaching practices, e.g. direct instruction, would produce the best learning effects. A complete learning strategies curriculum would include strategies which are general enough to promote acquisition, storage, and retrieval of information presented in many undergraduate courses.

Teaching Strategies

While instructors at the undergraduate level in college are often experts in their academic areas, they may lack such expertise in teaching skills (Stephens & Weaver, 1985). When students encounter difficulty in reading and studying at the college level, the blame for

such difficulty is often laid on the students and the inadequacy of their previous educational experience. However, consideration should also be given to the nature of reading and studying at the college level and the role of college teachers in the educational program (Stephens & Weaver, 1985). Further, by adopting effective instructional strategies, college teachers can enhance students' learning.

The instructional strategies presented in this section do not place great demands for time on the part of instructors. These strategies have been selected because they serve to facilitate learning without requiring special background or training. Yet they do require a commitment to work with the student to increase higher learning. Such a commitment is the first step in helping the student who is having difficulty learning in the college classroom.

The most common method of instruction at the college level is lecture. Lectures are economical in that they can present large amounts of information in a relatively short time. Yet lectures can represent a sizeable problem for students with learning problems because they require either an effective note-taking strategy or a considerable capacity for remembering information from an oral presentation. College teachers can utilize a format for lecturing that supports students' efforts to take notes and recall information. Organizing lectures with the following points in mind can support students' note-taking efforts:

1) Arrange lecture material around certain key concepts. Clearly identify those concepts for the students while lecturing and tie specific points into those concepts while progressing through the lecture. This allows students the opportunlity to divide lecture notes into

readily identifiable sections to facilitate later review and study of the material.

2) Provide an outline of your lecture on the chalkboard or overhead projector before you begin to deliver the lecture. This outline need not be detailed, but can merely identify the major concepts to be presented. This can serve as an "organi- zational map" to aid the students in organizing the lecture material and identifying the major concepts being covered.

3) Pause between key concepts. Use this as a time for students to catch-up on lecture notes, ask questions and provide a break in their notes between concepts. A pause of thirty seconds to a minute would be adequate in most situations if no questions are asked by the students. It would help the students if you alerted them in advance why you will be pausing and how they can take advantage of that time.

4) Use visual aids such as transparencies or the chalkboard to support your lecture whenever appropriate. Such aids provide assistance by reinforcing and extending the points you are making. They also provide a means for students to organize the materials you are presenting by using the visual aids to indicate points of emphasis in the lecture.

Reading and writing are mutually supportive in aiding student's learning (Stephens & Weaver, 1985). Learning has been described as being composed of three stages: perceiving, ideating and presenting

(Smith, Goodman & Meredith, 1976). Writing can be effectively used at all three stages as a means of facilitating learning and enhancing understanding. Most commonly, writing is considered a means of collecting information from students for the purpose of grading or evaluating their progress. Moreover, writing can be a personal tool to enhance learning, a tool that is not always formally graded or evaluated.

When students enter college classrooms they bring with them as many thoughts, ideas and concerns as there are individuals in the class. The problem that any instructor faces is to bring together those students so that they all can effectively attend to what is to happen in class. One effective means to accomplish this is to begin class sessions by asking students to write what they know, or need to know, about the topic to be covered that day in class. Such writing is private and personal and allows students to explore the topic and their knowledge about it by relating it to their personal backgrounds. Even if the students can write nothing about the topic, this can serve to help them pinpoint their own lack of knowledge in that area. The common experience of thinking and writing about the same topic serves to bring unity to the class and often yields a more beneficial class for all.

Another use of writing is to conclude a class session or unit of study by having students take a few minutes to write down what they have learned or come to better understand through the class activities. This is not a test but, instead, a period of self-evaluation. The purposes of this activity can be two-fold. First, it requires the students to tie together their thoughts well enough to write them down. Second, the instructor can collect these statements (this is most beneficial if the

students do not place their names on the papers, allowing them to state what they have or have not learned without fear of the teacher using such statements for evaluation). These statements can be used to help the teacher evaluate his or her instructional effectiveness by providing information about whether the students have learned what the teacher intended and which areas, if any, should be further addressed in class.

While most college teachers provide students the opportunity to ask questions during class periods, many worthwhile questions go unasked because of fear on the part of the students of looking foolish. Therefore, a further use of writing would be to have the students periodially write and turn in to the teacher questions regarding the course and the material. By doing this anonymously, students can ask those questions they wouldn't dare ask in class. Also by writing the questions the students themselves must come to terms with their own levels of understanding and cognitive clarity. This can serve to enhance student learning as well as provide valuable information to the teacher.

Whenever college students are asked how they determine what they should highlight or underline while reading, the most common response is always "whatever is important." This is clearly a common sense answer which actually sheds little light on the students' strategies. After all, that response only becomes clear when another question is answered, "How do you know what's important?" The answer to that must relate to knowing what they are seeking or why they are reading. In order to help students set clear purposes for what they are reading, it is important to let students know as early as possible what they are expected to do with the information they are learning from their reading. If tests are

part of the instructional plan, tell the students what types of tests will be given. When a student reads in preparation for multiple choice test, the types of things to be underlined or highlighted are quite different than when preparing for an essay exam (Spargo, 1983). The sooner the student knows what type of test to expect, the more efficient and effective can be the use of study time. If a test is given with more than one type of question on it, let the students know what types of questions will be asked. Providing the opportunity to know what to expect yields clarity of purpose which can lead to more effective studying.

Helping undergraduates set a purpose for their studying and reading is something most college teachers could accomplish without drastically altering their instructional approach. In addition to providing information about the type and nature of tests, instructors can provide information about what they would like to see students gain from their reading. The more specific the teacher can be, the more efficiently and effectively the students can read the material.

Many college students attempt to read and study all the material they are assigned. That is, students attempt to read the material carefully and analytically, learning from the material while reading it. Although this is an optional type of studying, it may be slow and laborious, consuming large periods of time. Also, in many cases thoroughly reading the material before class is ineffective because the students lack the necessary knowledge for understanding the material. In those cases the thorough reading will be more effective if it is completed after the class presentation has been completed. One instructional option for dealing more effectively with reading demands

is to have the students preview the material prior to class and then study read the material after the class session. Previewing ". . . gives students some idea of what a text selection is about in advance of reading it" (Vacca, 1981 p. 107). The benefits of previewing reading material before the class presentation are that it 1) allows students to determine what they do or do not know about the topic, 2) permits students to identify which sections of the text he or she will need to read with great care and which do not need to be read so carefully and 3) creates a sense of intellectual readiness for the presentation in class. By saving the study reading for after class, the material is likely to be easier because the students will have the additional knowledge and background for making the reading effective. What at first seems like a longer, more complex reading process can actually save time and make studying generally more effective. Teachers can aid their students by suggesting the strategy to their students and emphasizing it by indicating during the lecture or presentation which sections in the reading material are particularly important or worthy of careful study.

Reading and learning in college classes represents a major undertaking for most students at the undergraduate level. It may well be that the major resource available to undergraduate students is what they can learn and discover by working with other undergraduate students. The teacher can suggest to the students that they form study groups outside of class. Learning also can be facilitated by forming small groups within the classroom and using the class time to complete appropriate small group activities. The benefits of such groups for learning often make them an almost indispensable tool for increasing

learning (Estes & Vaughan, 1985). Successful group activities in the class make the formation of outside study groups more likely. The combined teaching strategies of study groups outside of class and small group work within the class can yield strong positive effects in terms of student learning.

The need for such approaches by college instructors was clearly presented by Stephens and Weaver (1985, p. 72):

> . . . if needed changes are to be effected in higher education, it will take creative thinking, a commitment to quality teaching by colleges and universities, and a willingness on the part of professors to develop new instructional methodology suited to the learning needs of the great majority of today's students.

Summary

In view of our findings that many college students are skill-deficient, the implementation for enhancing learning in college level content classes is worthwhile. In combination, specific learning strategies, used by the student which facilitate the acquisition, storage and expression of college level knowedge, and specific instructional strategies used by the teacher can make skill or strategy deficient students more successful in the college setting. The preceding suggestions, although not exhaustive of all developmental practices, are meaningful in pursuing the mission of meeting the learning needs of a great number of today's skill deficient college students.

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Abstract

For many reasons including open enrollment policies, Federal laws prohibiting discriminatory admission policies and standards, and public school encouragement to many students for college enrollment, college instructors are finding sizeable numbers of skill-deficient and learning disabled students in their classes. This article summarizes the findings of the investigation of the skill levels of selected groups of students at two midwestern state universities. Furthermore, specific learning strategies for student use and instructional strategies for the class instructor are offered.